EPRI Nuclear Sector & The Need For Collaborative R&D

Neil M. Wilmshurst

Vice President & CNO

January 24 2017

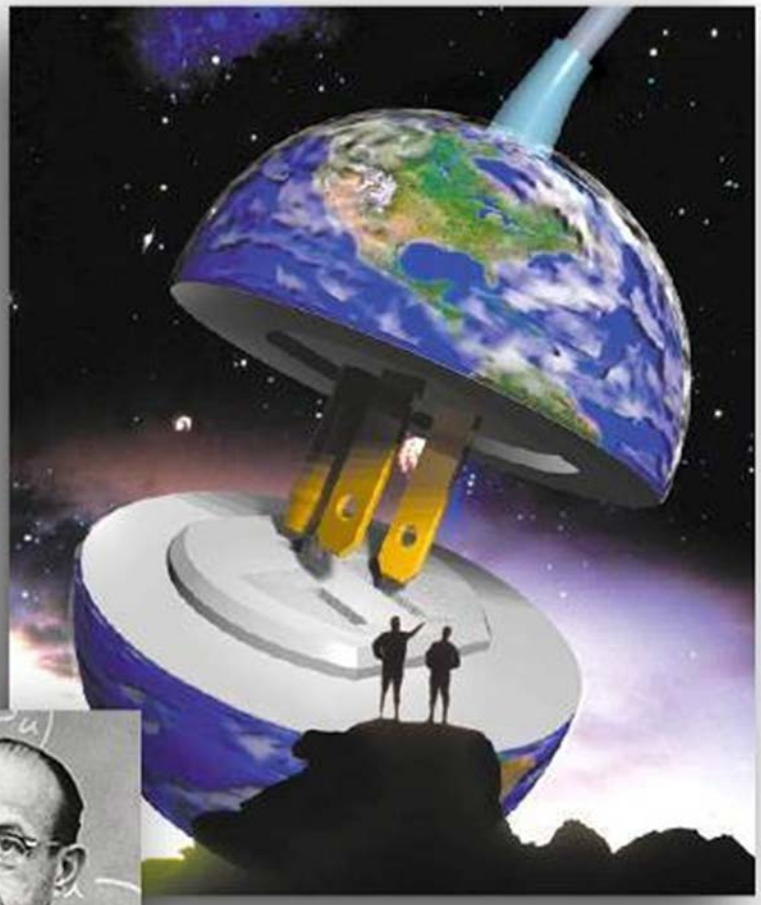
Our History…Born in a Blackout

- EPRI was founded by and for the electricity industry in 1972 following The Great Northeast Blackout in New York City in 1965
- Formally established in 1973 as the Electric Power Research Institute, EPRI manages a broad public-private collaborative research program on behalf of the electric utility industry, the industry's customers, and society at large

Our History…Born in a Blackout

EPRI | ELECTRIC POWER RESEARCH INSTITUTE

- EPRI is an independent, nonprofit center for public interest energy and environmental research
- Collaborative resource for the electricity sector
- Major offices in Palo Alto, CA; Charlotte, NC; and Knoxville, TN
  - Laboratories in Knoxville, Charlotte, and Lenox, MA

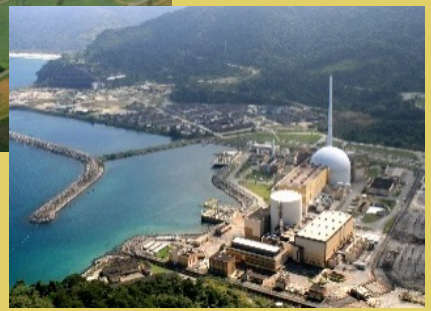


Chauncey Starr
EPRI Founder

Nuclear Sector = Global Collaboration

GLOBAL PARTICIPANTS

GLOBAL BREADTH & DEPTH



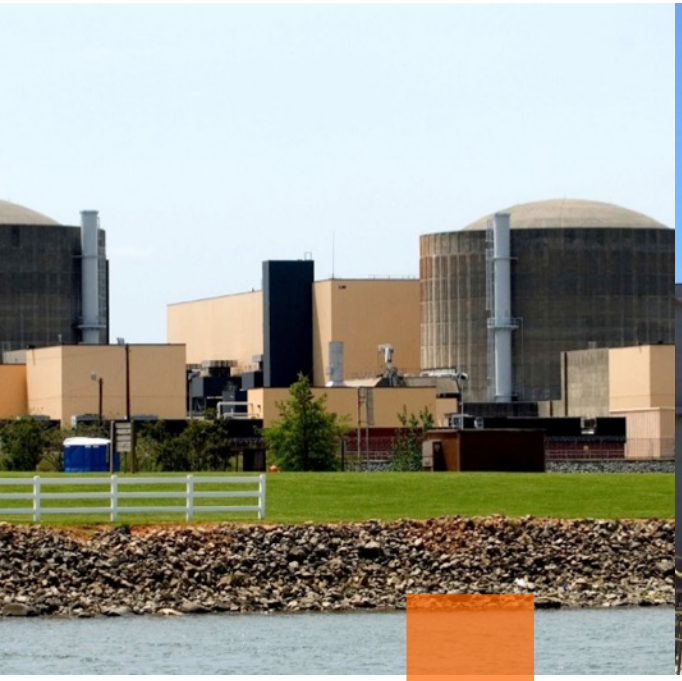
>320 reactors worldwide

>75% of the world's commercial nuclear units

Participants Encompass Most Nuclear Reactor Designs

EPRI ELECTRIC POWER RESEARCH INSTITUTE

Core Drivers



Maximize

the safe utilization of existing nuclear assets

Enable

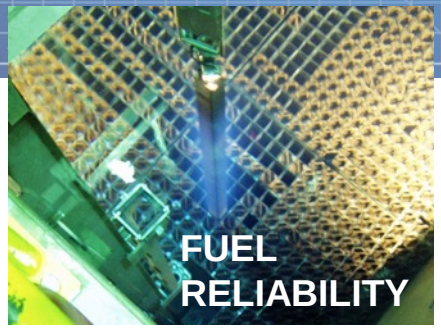
the deployment of advanced nuclear technologies

Assess

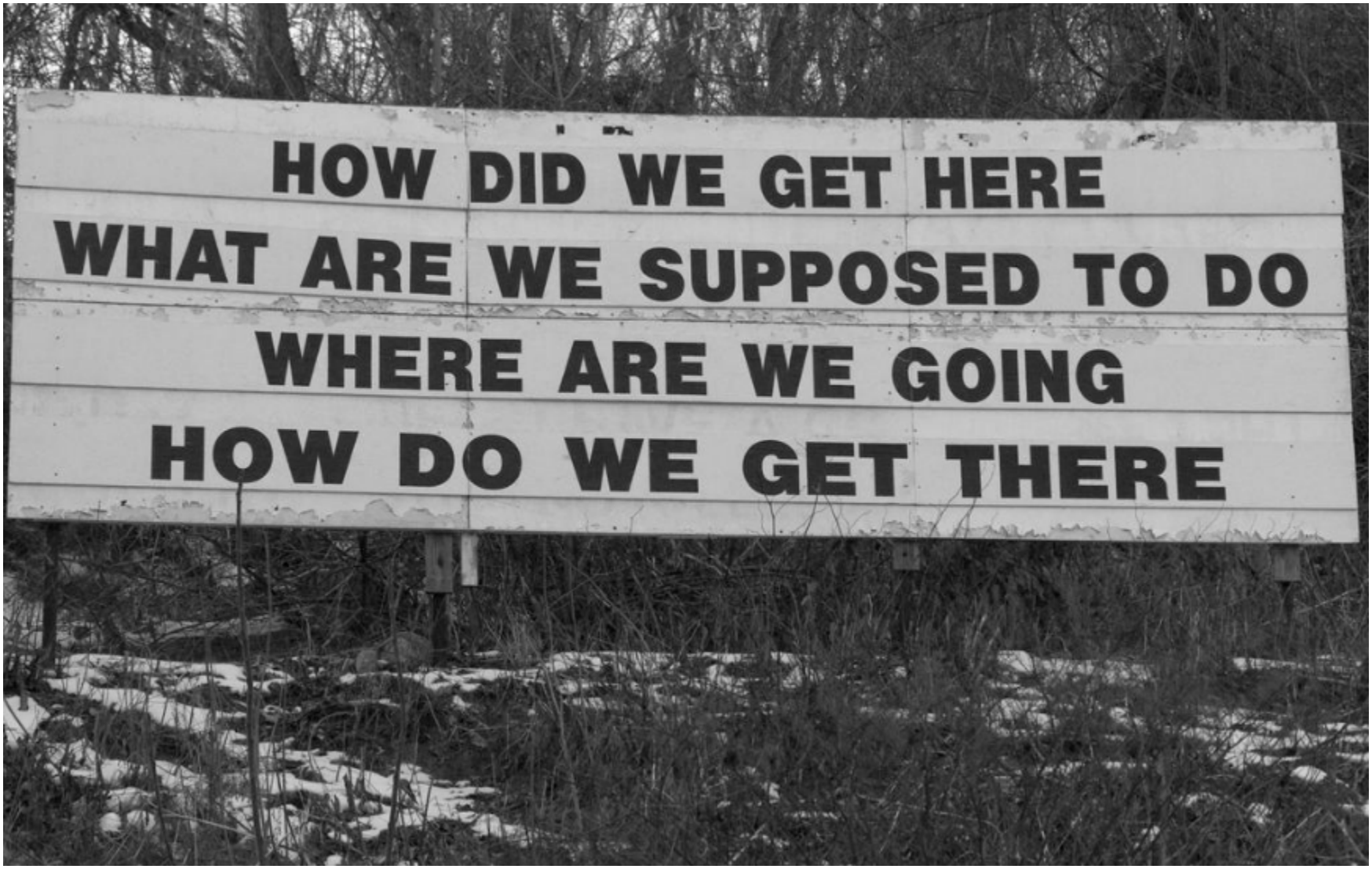
long-term sustainability of nuclear energy

Nuclear Sector Research Areas

EPRI | ELECTRIC POWER RESEARCH INSTITUTE

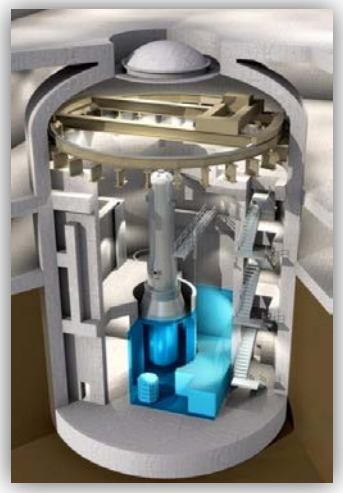


Looking Forward…Learn Lessons From the Past…



Nuclear Industry – a US Perspective?

- Can the future come fast enough?.....



nuclear matters
Making sense of Nuclear Industry issues

EPRI ELECTRIC POWER RESEARCH INSTITUTE

A Global Perspective…

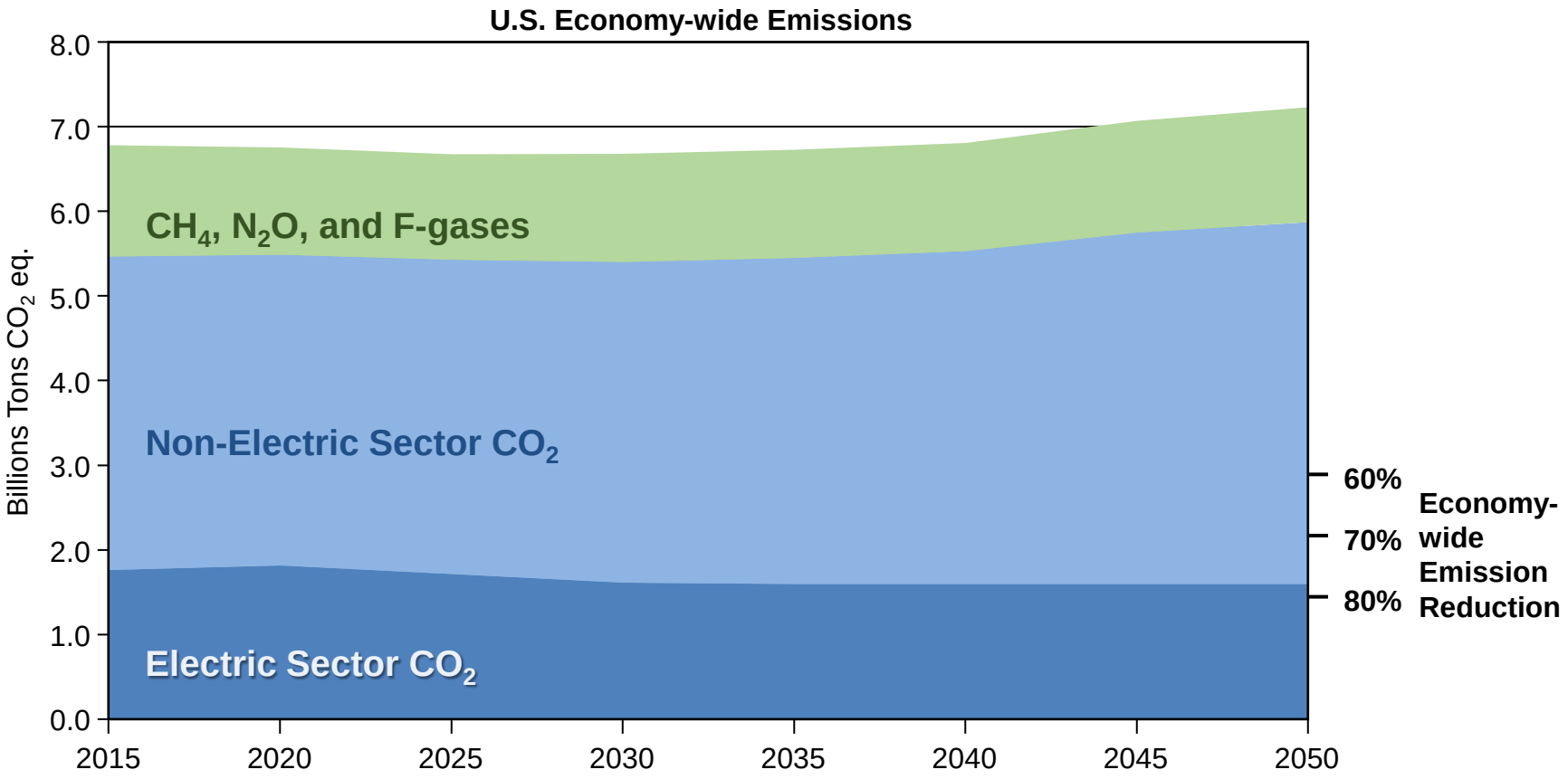
Fatih Birol, IEA Executive Director

Global addition to capacity in 2015 hit 10.2 gigawatts, the highest growth in 25 years

"We have never seen such an increase in nuclear capacity addition…"

"It shows that with the right policies, nuclear capacity can increase"

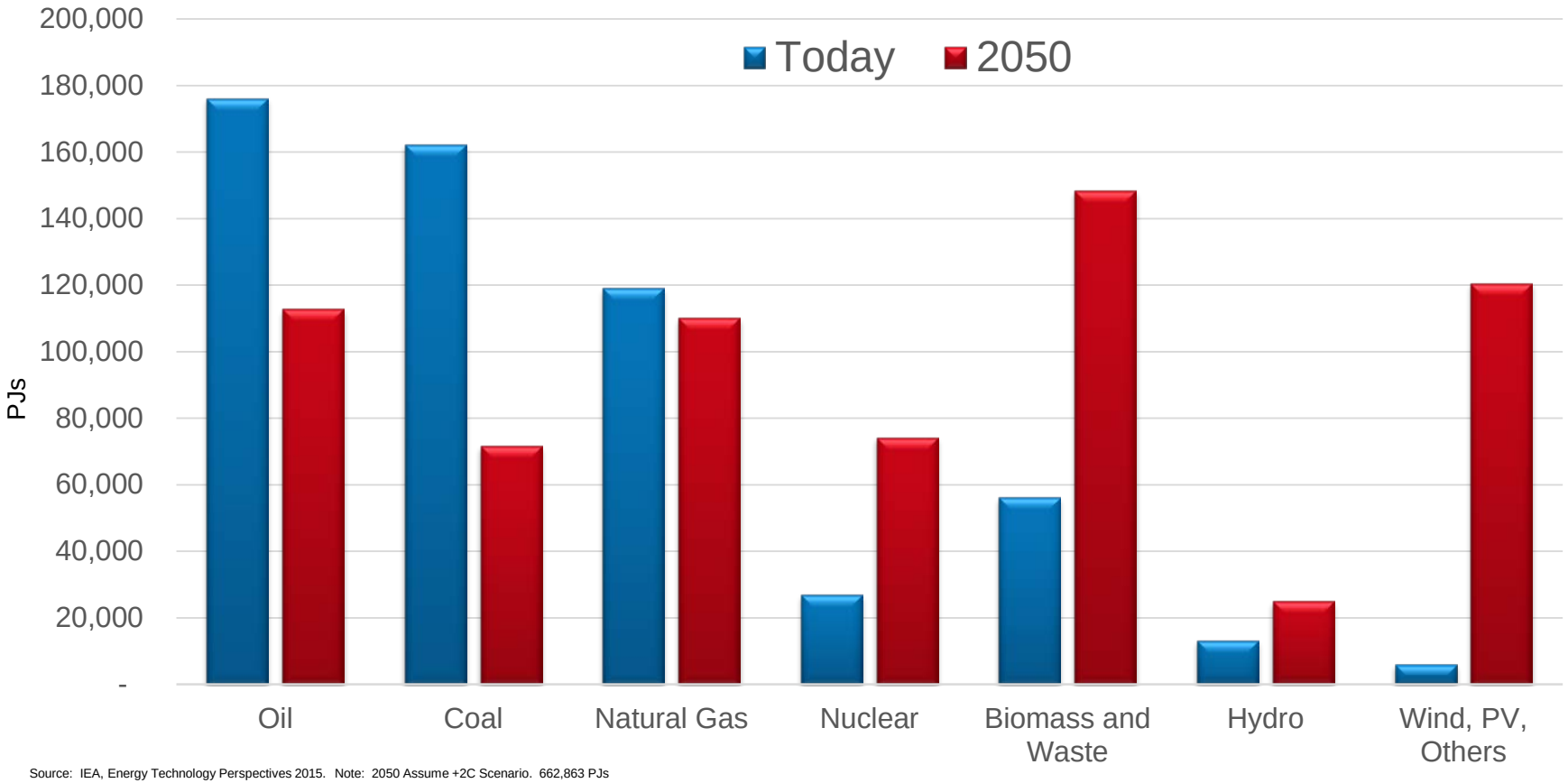
Clean Electric Sector Enables Economy-wide Emission Reduction



Source: US-REGEN data; Energy Modeling Forum 24

Electrification - the Pathway to Economy-wide CO_2 Reductions

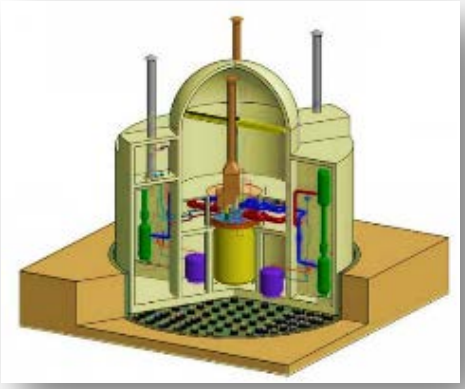
Global Energy: A Look to 2050



Source: IEA, Energy Technology Perspectives 2015. Note: 2050 Assume +2C Scenario. 662,863 PJs

18% Increase in Energy Use – Shift from Fossil to Low-CO2 Emission Technologies

Pathway of Cleaner Electricity/Energy Generation ~ 2050

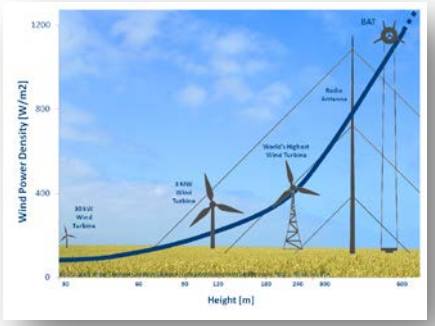


Generation IV Nuclear
(co-production – electricity, hydrogen steam)

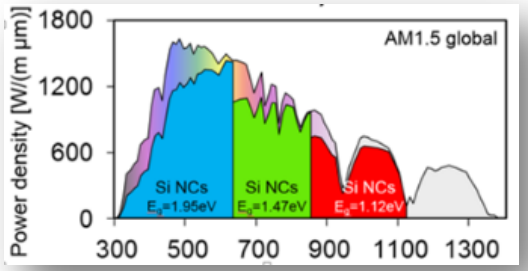
Large-Scale Storage

Advanced Power Cycles
e.g. Supercritical CO2 Cycle

Technology Innovation in the next decade will be Key to Ensure all Options for Cleaner Energy Production are Available in the Long Term



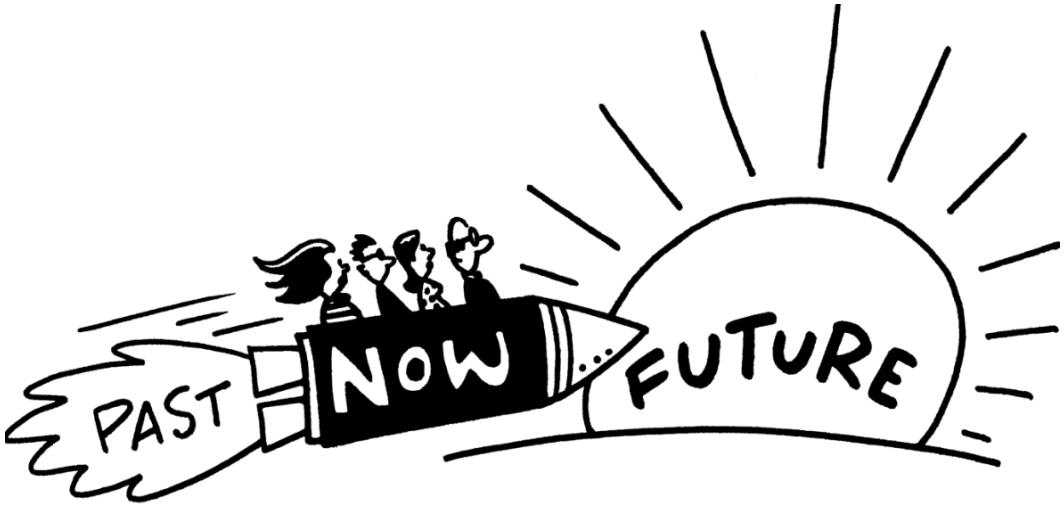
High Altitude/Power Wind



Gen III Photovoltaic (PV)

The Future…

- ***Think*** globally
- ***Accept*** that many countries do nuclear well
- ***Collaborate*** Internationally – share and learn
- ***Participate*** in global forums (NEA, IAEA WANO, WNA,, etc..)
- Actively ***understand*** new designs and progress



Together…Shaping the Future of Electricity